

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

In the Claims:

Claim 1 (Original) A method for electroplating a metal layer on a semiconductor structure having recessed regions and non-recessed regions, comprising:

electroplating within a first current density range before the metal layer is planar above recessed regions of a first density; and

electroplating within a second current density range after the metal layer is planar above the recessed regions, wherein the second current range is greater than the first current range.

Claim 2 (Original) The method of claim 1, wherein the first current density range is between 0.5 mA/cm^2 and 5 mA/cm^2 , and the second current density range is between 5 mA/cm^2 and 30 mA/cm^2 .

Claim 3 (Original) The method of claim 1, wherein electroplating within the first current density range is carried out at a constant current density.

Claim 4 (Original) The method of claim 1, wherein electroplating within the first current density range is carried out at an increasing current density.

Claim 5 (Original) The method of claim 4, wherein the first current density increases linearly.

Claim 6 (Original) The method of claim 4, wherein the first current density increases non-linearly.

Claim 7 (Original) The method of claim 1, wherein electroplating within the first current density range includes decreasing the current density.

Claim 8 (Original) The method of claim 1, wherein electroplating within the second current density range is carried out at a constant current density.

Claim 9 (Original) The method of claim 1, wherein electroplating within the second current density range is carried out at an increasing current density.

Claim 10 (Original) The method of claim 9, wherein the second current density increases non-linearly.

Claim 11 (Original) The method of claim 1, wherein electroplating within the second current density range is carried out at a decreasing current density.

Claim 12 (Original) The method of claim 1, wherein the recessed regions of a first density include recesses with a size between 0.035 to 0.5 microns and spacing in the range of 0.035 to 0.5 microns, and a large recess with a dummy structure having a size between 0.05 and 2.0 microns and spacing in the range 0.05 and 2.0 microns.

Claim 13 (Original) The method of claim 12, wherein the metal layer is electroplated above the regions of the first density until the metal layer is planar above the regions of the first density, and electroplating over a region of second density until the metal layer is planar above the region of first density and the region of second density, wherein the region of second density is greater than the region of first density.

Claim 14 (Original) The method of claim 13, wherein after the metal layer is planar above the region of second density and the region of first density, electroplating at a third current density greater than the second current density.

Claim 15 (Original) The method of claim 1, wherein the metal layer is electroplated with an electrolyte fluid including an accelerator, suppressor, and leveler.

Claim 16 (Original) The method of claim 15, wherein the accelerator concentration is between 1.5 and 2.5 ml/liter, the suppressor concentration is between 7 and 9 ml/liter, and the leveler concentration is between 1.25 and 1.75 ml/liter.

Claim 17 (Original) The method of claim 1, further including controlling the grain size of the metal layer with additives in the electrolyte fluid.

Claim 18 (Original) The method of claim 17, wherein the additives include at least one of a brightener, accelerator, suppressor, and leveler

Claim 19 (Original) The method of claim 1, further including rotating the semiconductor structure with a chuck at a rotation speed of 50-200 rpm.

Claim 20 (Original) The method of claim 1, further including rotating the semiconductor structure with a chuck at a rotation speed of 125 rpm.

Claims 21-78 (Canceled).